

- c) monitor all major competitive brands of cigarettes for CF content.

Recent CF analysis (March, 1975) of all major cigarette brands (with comments regarding the status of our own brands) is shown below.

PHILIP MORRIS, INC.

Marlboro (Regular and Menthol)	- ND
B&H (Regular and Menthol)	- ND
Virginia Slims (Regular and Menthol)	- ND
Alpine	- ND
PM Commander and Regulars	- ND
Multifilter Menthol	- ND
English Ovals	- ND
B&H de Luxe	- ND
Parliament	- ND
(CF was removed and compensation added in 1974, subsequently test marketed with satisfactory results, and is now manufactured without CF)	
Marlboro Lights	- 5 PPM
(A CF-model with compensation was developed and HTI-tested in 1974 with satisfactory results. This models is now being test marketed)	
Multifilter/Galaxy	- 4 PPM
(Work to make this brand CF-free is in progress. An RP ³ test indicated some differences between a CF-free model with compensation and Multifilter control. This model is now being re-evaluated internally.)	

R. J. REYNOLDS

	<u>March, 1975</u>	<u>May, 1974</u>
Winston 85	ND	ND
Salem 85	ND	ND
Camel 70	ND	ND
Vantage 85	ND	ND
Doral 85	ND	ND
Tempo 85 (Minor brand)	20 PPM	45 PPM
	(interference on GC scan)	

BROWN AND WILLIAMSON

	<u>March, 1975</u>	<u>May, 1974</u>
Kool 85	6 PPM	7 PPM
Viceroy 85	ND	ND
Raleigh 85	ND	ND
Belair 85	4 PPM	9 PPM

AMERICAN BRANDS

	<u>March, 1975</u>	<u>May, 1974</u>
Pall Mall 85	14 PPM	14 PPM
Tareyton 85	30 PPM	22 PPM
Pall Mall 100	11 PPM	3 PPM (approx.)
Lucky 70	10 PPM	6 PPM

LORILLARD

	<u>March, 1975</u>	<u>May, 1975</u>
Kent 85	10 PPM	16 PPM
True 85	10 PPM	8 PPM

LIGGETT & MYERS

	<u>March, 1975</u>	<u>May, 1974</u>
L&M 85	ND	ND
Lark 85	ND	ND

2. Licoricea. Introduction

Licorice is a water extract from the roots and rhizomes of Glycyrrhiza Glabra, a leguminous plant. After evaporation, the characteristic solid, black, gummy material known as licorice is obtained.

Licorice is an intensely sweet (due to glycyrrhizin which is fifty times sweeter than sucrose), slightly spicy and smokey substance, and has a rich caramellie/burnt sugar, root-like character. It finds uses in food and medicine but mostly in the tobacco industry as a casing component.

World production of this material is in the range of 50,000,000 pounds, 20,000,000 of which is produced in this country by MacAndrews and Forbes, mostly for the needs of the tobacco industry in the United States. Use by Philip Morris makes up a significant portion of this total.

During 1974, because of the Middle East crisis, labor strikes, and other factors, shortages of licorice were realized. In addition, prices increased. Consequently, Flavor Development was assigned the task of developing and testing a satisfactory licorice substitute for our cigarettes.

b. Licorice Make-Up and Effects

Early in 1974 Flavor Development became engaged in work to establish the subjective effects of licorice extract on tobacco and with the assistance of the Flavor Transfer Group and the Analytical Division, to identify the licorice make-up, including the potential flavor contributors. The results obtained are shown below:

i) Subjective Effects of Licorice on Tobacco

- Licorice gives cigarettes more fullness
- Eliminates roughness and provides smoothness
- Makes cigarette sweeter
- Overall, it increases subjective acceptability
- Glycyrrhizin alone is not a substitute for licorice
- The pulverized plant root is not a substitute for licorice